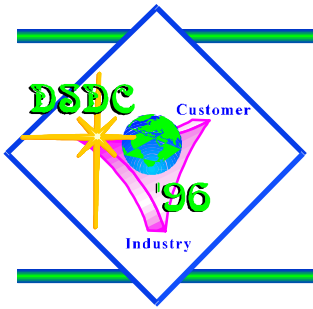
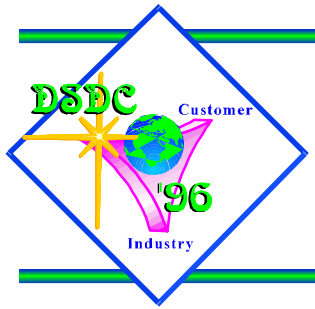


Continuity Of Operations (COOP)

Presented By: James M. Haskins
DSDC-TD
(614) 692-9432



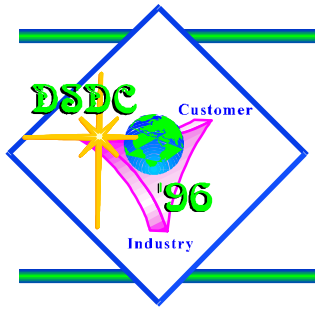
INTRODUCTION

Definitions

The Continuum Of Possible Solutions

Solutions For The DLA Mainframe Environment

Solutions For The DLA Mid-Tier Environment



DEFINITIONS

By COOP, We Mean Disaster Recovery

While Protection Of The Data Center From Outages Caused By A Failed Resource (e.g... DASD Failure) Is Related To COOP, It Is Not The Focus Here

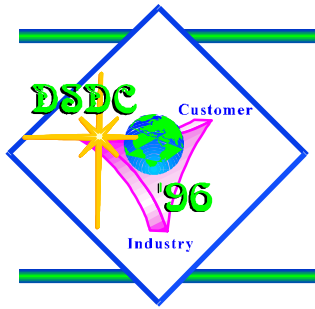
COOP Planning Addresses Protection From Events That Render The Data Center Inoperable

DEFINITIONS

These Events Include Natural Disasters

But, There Are Many Other Events That Could Require Activation Of The COOP Plan

Examples Are Fire, Airplane Crash, Contamination, Public Disturbance, and Vandalism



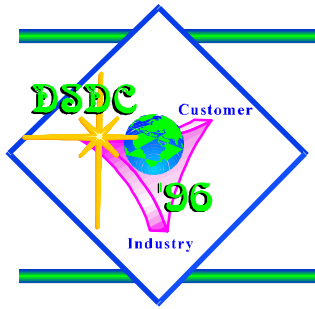
DEFINITIONS

The Impact Of The Event Need Not Be Direct

- **An Earthquake Might Leave The Data Center Intact But Make It Inaccessible**
- **The Disaster Might Strike A Power Plant, Thus Cutting Off All Power To An Intact Data Center**

Protection Against These Long Outages Needs To Be Understood As Insurance

We Also Need To Understand That, Even Though We Spend Dollars To Pay Our Premium, The Desired Result Is That We Never Need To Actually Use The Recovery Facilities



POSSIBLE SOLUTIONS

The Continuum Of Possible Solutions

It Is Common For Data Centers To Make Backup Copies Of Data And Store Them Offsite

In DLA, The So Called Dover Tapes Were Sent Offsite For Years

This Is Simply Not Sufficient If A System Is To Be Recovered In A Reasonably Short Period

CAN WE DO NOTHING

One Option Is To Simply Do Nothing And Accept The Risk

For DLA's Mainframe Environment, DMRD 924 And 918 Consolidations Have Made This Option Untenable

A Disaster At DMC Columbus, Which Supports Something Like 85% Of DLA's Business, Would Put DLA Out Of Business

MUTUAL BACKUPS

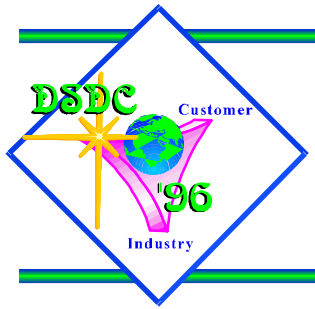
Another Option Is To Enter Into An Agreement With Another Site To Provide Mutual Backup

In The Old DLA Mainframe World, Processing Was Spread Over 18 Sites

The DSDC Mainframe Was Large Enough To Support Any One Of These Sites

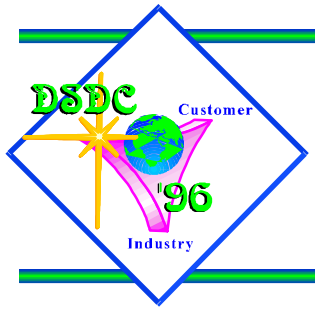
So, In Effect, DSDC Was The DLA COOP Site And Was Actually Used For That Purpose Once Or Twice Over The Years

However, This Is No Longer An Option



WHAT ABOUT IN-HOUSE BACKUP

- Most Failures Are Of Small Scope And Result From Component Failures
- They Occur Fairly Frequently And Can Be Recovered Quickly (In A Matter Of Hours
- Component Failures Are Backed Up In-House
- But, In-House Backup Does Not Protect Against Disasters

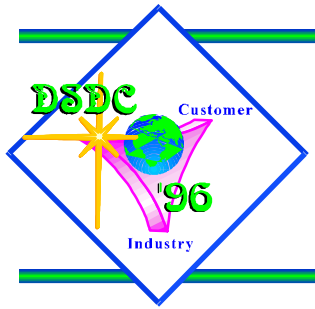


SECONDARY DATA CENTERS

Failures Of Large Scope Have A Low Likelihood

However, The Downtime Is So Extremely Long That Some Backup Facility Is Critical To Business Survival

For Site Failure Or Destruction, A Secondary Data Center Is Mandatory

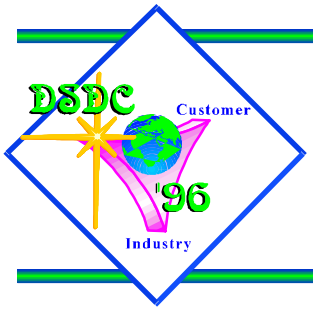


QUESTIONS TO POSE

In-House Backup And Disaster Backup Are Thus Both Required

They Are Complementary Requirements In Order To Maintain High Availability Of Service

The Cost And Difficulty Of Providing Disaster Recovery Will Depend On The Answers To Several Key Questions



KEY QUESTION 1

Outage Time

- The Acceptable Length Of An Outage Is A Key Factor In Determining The Method Of Disaster Recovery
- As The Acceptable Outage Period Gets Smaller, The Cost Of Disaster Recovery Grows
- If The Acceptable Outage Period Is Measured In Days Then There Is Time To Recover From Stored Backup Tapes And Recovery Logs

DLA'S ANSWER TO 1

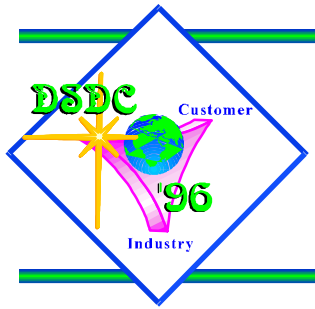
If The Acceptable Outage Period Is Measured In Minutes Disaster Recovery Will Require Continuous Updates To Remote Duplicate Data Bases. The Cost For This Can Be Very High

For DLA's Mainframe Environment The Current Goal Is To Recover Within 24 Hours. The Long Term Goal Is Continuous Availability

KEY QUESTION 2

Loss Of Data

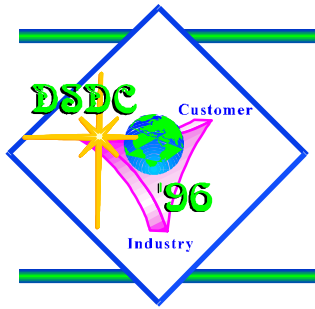
- How Much Loss Of Data Can Be Tolerated
- If Data Is Not Immediately And Continuously Sent To The Recovery Site, Some Data Will Be Lost When A Disaster Occurs
- The Lower The Acceptable Level Of Loss, The Greater The Cost
- For Example, If Recovery Data Is Sent Off-Site Each Day At Midnight And The Disaster Occurs At Noon, 12 Hours Of Data Will Be Lost



KEY QUESTION 3

Data Currency

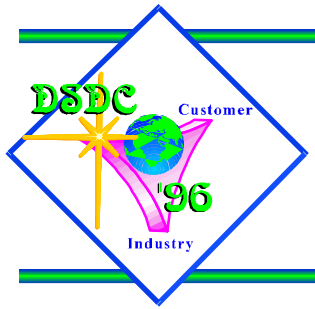
- How Current Should The Data Base Be When Service Is Restored
- In General, Making The Data Current Means Applying Transaction Logs
- This Takes Time And Extends The Time Required To Restore Service



CHEAP OR FAST

The Answers To These Questions Determine The Strategy To Be Used And The Cost

Recovery Is Either Cheap Or Fast, Not Both



DLA'S APPROACH

Solutions For The DLA Mainframe Environment

DLA's Production Mainframe Workloads Are Supported From The Megacenters at Columbus, Ogden and Mechanicsburg

In-House Backup Is Provided In The Normal Way Through A Regular Schedule Of Weekly And Daily Backups

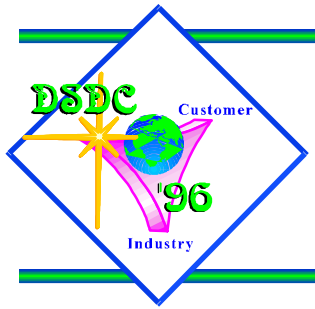
For Disaster Recovery Purposes This Data Is Unsafe Because It Must Be Kept On-site To Recover Component Failures

OFF-SITE STORAGE

This Year, DLA Has Been Working Closely With DMC Columbus To Address Disaster Recovery Needs

DMC Columbus Stores Weekly Backup Tapes At An Off-Site Location

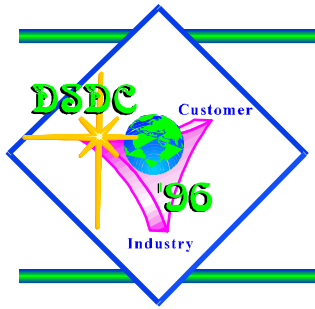
DSDC Has Worked Closely With The DMC To Identify A Set Of Daily Backup Tapes To Be Stored Off-Site



CURRENT STATUS - MAINFRAME

As It Stands Now Disaster Recovery Will Work As Follows

- After Re-establishing The Operating Environment, The Latest Weekly Dumps Are Used To Re-establish Application Data
- Daily Backups Are Used To Roll Forward As Needed
- Depending On The Application, Some Updates Will Be Lost And Have To Be Re-applied By The Users
- The Goal Is To Restore Service Within 24 Hours



CURRENT STATUS - MAINFRAME

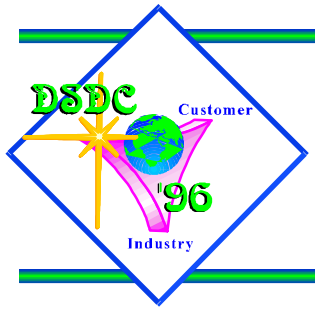
DLA Has Contracted With COMDISCO For Hot Site Disaster Recovery Services

As DISA's COOP Site At Slidell, La. Comes On Line It Will Take Over As The Hot Site

A Regular Schedule Of Disaster Recovery Tests Are Being Planned and Executed

DISA Is Working On Long Term Electronic Vaulting Schemes

For The Longer Term Electronic Vaulting And Continuous Availability Via Replicated Data Bases Is Under Investigation



DLA'S APPROACH - MID-TIER

Solutions For The DLA Mid-Tier Environment

- Over The Past Several Years DLA's Mid-Tier Environment Has Grown Rapidly
- More And More Critical DLA Business Is Supported By These Systems
- Larger And More Powerful Systems Are Being Used To Consolidate Workload From Multiple Smaller Systems

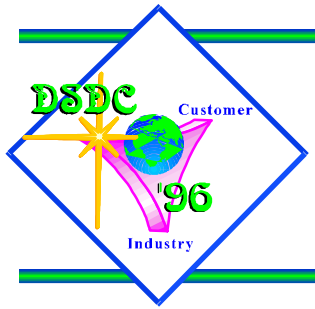
DLA'S APPROACH - MID-TIER

As This Process Proceeds Disaster Recovery Capability Is Becoming Mandatory

In The World Of DLA's Inventory Control Points (ICPs) All Of These Trends Are Coming Together

Large HP Systems Are Being Used To Consolidate Workloads

These Systems Are Critical For ICP Support



DISK MIRRORING

- For The ICP Environments, DLA Is Evaluating Disk Mirroring Solutions
- This Capability Allows Logical Disk Volumes On Physically Separate Disk Units To Be Mirrored On An I/O By I/O Basis
- The Mirrored Disk Units Are Connected By High Speed Communications Links Such As T3 Or ATM
- This Is Transparent To Operating Systems And Applications
- This Uses No Host Resources
- The Result Is A Continuously Updated Mirror Copy Of Data At The COOP Site

THE GOAL

- High Speed Tape Arrays Capable Of 12 MB Per Second Transfer Rates Will Provide Additional Backup
- These Technologies Should Make Continuous Operations And Rapid COOP Site Activation In The Event Of Disaster Possible
- Full Rollout Of These Capabilities Will Depend On Funding Availability

CONCLUSION

Conclusion

- More Than Ever Before DLA Is Dependent On Information Technology
- Long Service Outages Cannot Be Tolerated
- Well Designed And Tested Disaster Recovery Schemes Are A Requirement
- This Requirement Is Being Vigorously Pursued
- Remember That COOP Can Be Either Fast Or Cheap But Not Both
- Remember Too That This Is Like Insurance. We Pay Our Premiums But Hope That We Never Have To Use It

QUESTIONS

COOP

Presented By: James Haskins

DSDC-TD

(614) 692-9432

DSN 850-9432

Email: jhaskins@dsac.dla.mil